

Assessment of Liver and Kidney Functional Parameters along with oxidative Stress and Inflammatory Biomarker in Patients with β -Thalassemia major

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Abstract

Background: Thalassemias are the most common inherited blood disorders caused by some mutations which can reduce the synthesis of globin chains. Iron overload and its organ deposition are responsible for functional abnormalities and tissue injury in patients who affected by β -thalassemia major. The aim of this case-control study was evaluation of hematological parameters, oxidative stress and some serum liver and kidney risk factors which play crucial role for early prediction and prevention of patients to end-stage tissue failure and mortality.

Materials and Methods: Present study consisted of Fifty young adult subjects with β -thalassemia major (β -TM) (aged<18 years) and same number age and sex- matched healthy subjects as control group. Hematological and biochemical laboratory parameters included Urea, Creatinine, Uric Acid, Aspartate Aminotransferase (AST), Alanine transaminase (ALT), Alkaline phosphatase (ALP) (pars azmoon kit), oxidative stress biomarker PAB, giving a redox index (chemically), and serum high-sensitivity C-reactive protein (hs-CRP) were evaluated.

Results: Urea, Creatinine and Uric Acid were significantly decreased in patients group ($P<0.001$); in spite of, serum ferritin, liver biomarkers AST, ALT, ALP and risk factor biomarker PAB were statistically increased in patients versus control group ($P<0.001$), whereas hs-CRP ($P>0.05$) was not significantly difference in study groups. Exception hs-CRP and PAB ($P>0.05$), liver risk factors had a positive correlation with ferritin and serum Urea, Creatinine and Uric Acid tests had negative meaningful with hematological parameters ($P<0.001$). Likewise, PAB with AST showed a positive correlation ($P<0.001$) and irreversibly with urea and creatinine ($P<0.001$). We did not find a slight correlation between hs-CRP in the company to hematological and biochemical laboratory finding ($P>0.05$).

Conclusion: Higher level of risk factors PAB values and key liver enzyme profiles are able to involve in the prognostic pathological consequences in patients with β -thalassemia major. Even so, they contribute toward the gradual development of tissue injuries.

Key Words: Beta-thalassemia major, kidney, live, Inflammatory, Oxidative stress

Introduction

Alpha (α) and Beta (β) thalassemia are the most common inherited single gene worldwide hemoglobin disorders, characterized by impaired or decreased rate of production in one or more

hemoglobin chains. The prevalence of thalassemia gene is about 3% all around the world and World Health Organization (WHO) estimates that at least 6.5% of the world populations are carries of different inherited disorders of hemoglobin(1, 2). It